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Codeine use, dependence and help-seeking behaviour in the UK and Ireland: an online cross-sectional survey

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Abstract

Background

Codeine misuse and dependence poses a clinical and public health challenge. However, little is known about dependence and treatment needs in the UK and Ireland.

Aim

To characterise codeine use, dependence, and help-seeking behaviour.

Design

An online cross-sectional survey advertised on Facebook, Twitter, health and drug websites and e-mail circulars.

Methods

The survey collected data on demographics and codeine use amongst adults from the UK and Ireland. The Severity of Dependence Scale measured the level of codeine dependence.

Results

The sample of 316 respondents had a mean age of 35.3 years ($SD = 12.3$) and 67% were women. Of the 316 respondents, 54 scored ≥ 5 on the Severity of Dependence Scale indicating codeine dependence (17.1%). Our study found that codeine dependence is a problem with both prescribed and 'over-the-counter' codeine. Codeine dependence was associated with daily use of codeine, faking or exaggerating symptoms to get a prescription for codeine and 'pharmacy shopping' ($P < 0.01$). A higher number of respondents had sought advice on the Internet (12%) rather than from their general medical practitioner (GP) (5.4%). Less than 1% of respondents had sought advice from a pharmacist.

Conclusions

Codeine dependent users were more likely to seek help on the Internet to control their use of codeine than from a GP, which may indicate a potential for greater specialised addiction treatment demand through increased identification and referrals in primary care.

Keywords

Opioids; analgesics; codeine, dependence; treatment needs.

Introduction

Opioid analgesics are widely used and associated with misuse and dependence in the UK and Ireland.¹⁻⁴ The use of opioid analgesics increased from around 35.9m Defined Daily Doses (DDD) in 2001-03 to 117.9m DDD in 2011-13 in the UK and from roughly 3.1m DDD to 9.3m DDD in Ireland.⁵ During this period, the global consumption of codeine grew from 183 tons in 1995 to 287 tons in 2014, making it one of the most commonly used opioids in both these countries.⁶

However, comparing statistics of codeine use with data on codeine addiction and mortality indicates a problem. In the UK, 2.2% of those attending specialist addiction treatment did so for codeine (2013/14).⁷ This amounts to over 4,000 people and has steadily increased over time. In Ireland, 1.7% (1,382 people) attended drug treatment for codeine between 2008 to 2012.⁸ Combined codeine and morphine mortality data from Ireland shows death-rates have remained stable over the past five years with 58 deaths in 2010 and 61 deaths in 2014.⁹ However, data from England and Wales recorded 88 deaths relating to codeine in 2011 rising to 128 deaths in 2015.¹⁰ Codeine or a codeine containing compound were implicated in 31 deaths in Scotland in 2015, presenting an increase over the last decade.¹¹

The control of codeine is similar in the UK and Ireland, reflecting a similar judgement of safety issues. In both countries, codeine is available as Prescription-only medicines (POM) and as Pharmacy medicines (P) sold 'over-the-counter' in licensed pharmacies without a medical prescription.¹² Prescribed codeine may contain a high dose of codeine (15, 30 or 60 mg per unit dose), either alone or in combination with a non-opioid analgesic, such as paracetamol or ibuprofen. The codeine dose in 'over-the-counter' preparations is restricted to lower amounts (maximum 12.8 mg per unit dose).

Studies from the UK and Ireland have examined the use of 'over-the-counter' codeine specifically,^{13,14} with few addressing the potential for misuse and dependence of high-strength prescription-only codeine. However, a UK survey of general medical practitioners (GPs) underlined problems relating to both categories: more than half reported that patients lack awareness of the potential harms of prescribed codeine and more than 80% reported that the availability of 'over-the-counter' codeine adds to the potential for misuse.¹⁵ An investigation of

codeine use and dependence in the UK and Ireland is timely because of the recent indicators of problems of mortality and dependence.

This study aims to characterise codeine use and dependence in an online sample of people from the UK and Ireland. It utilises a cross-sectional dataset from an online survey to investigate use, severity of dependence, 'shopping' behaviours and utilisation of support resources to manage codeine use relating to prescription-only and 'over-the-counter' codeine. These factors mark potential problematic health issues and treatment needs arising from codeine dependence important to development of practice and policy.

Methods

Self-reported data about codeine use amongst adults (≥ 18 years) residing in the UK or Ireland were collected from an online survey. Ethical approval was granted by the Psychiatry, Nursing, and Midwifery Research Ethics Subcommittee (PNM RESC), King's College London. REC Reference Number: PNM/14/15-110.

Recruitment

A link to the survey was posted via Facebook, Twitter, discussion forums, newsletters, and e-mail circulars, namely from (i) websites dedicated to health, pain and medicine use; (ii) drug addiction organisations; (iii) an online drug discussion forum, where users share their experiences of drug use;^{16,17} (iv) e-mail circulars to staff and students at two universities to include young people. The main inclusion criteria for the study was use of medicines containing codeine (prescribed and non-prescribed) in the last three months. Participation was anonymous and uncompensated.

Measurements

The questionnaire contained 49 questions covering respondents' demographics, codeine use, dependence, and help-seeking (See supplementary information). Respondents were asked to write in the amount of codeine (mg) taken in a day on the last occasion of use. Instructions on calculating the dose was provided. Use of codeine was collapsed into two categories, under and over the recommended daily dose of 240 mg codeine under the guidelines of British National

Formulary (BNF).¹⁸ Importantly, other restrictions of consumption exist with combination tablets containing codeine and ibuprofen (BNF maximum daily dose = 2,000 mg ibuprofen) or paracetamol (BNF maximum daily dose = 4,000 mg paracetamol). However, given this present study was primarily concerned with codeine dependence, the maximum codeine dose was investigated. Frequency of use was measured over the last three months in terms non-daily and daily use.

Respondents were asked to identify their main source of codeine. They were asked to choose between: (i) prescribed by a professional; (ii) 'over-the-counter' in a pharmacy; (iii) shop on the Internet; (iv) from family, partner, friend or acquaintance.

The Severity of Dependence Scale was used to assess dependence. The Scale is short and easy to understand, allowing people to answer it quickly and consistently.¹⁹ It consists of five questions, scored from 0 to 3, and can be used to measure the degree of dependence on a range of substances,^{19,20} including medicines.²¹ We used a cut-off score of ≥ 5 as this has previously been used to determine codeine dependence.²² Respondents answered all the required scale items.

Questions from a scale designed to measure reasons for substance use were included to investigate use and misuse of codeine.²³

Additional questions asked about codeine 'shopping' of both prescribed and 'over-the-counter' codeine using a definition of obtaining a prescription for codeine from three or more prescribers over a period of six months and obtaining 'over-the-counter' codeine from three or more pharmacists over a six-month period.²⁴

Help-seeking to control codeine use was captured in three questions, asking respondents to indicate if they had sought advice to help control their use of codeine from a (i) pharmacist, (ii) GP, and (iii) on the Internet.

The questionnaire was designed in Bristol Online Surveys (BOS), revised by an expert advisory group to the study, and reviewed by substance misuse treatment providers and service users with codeine misuse experience to ensure its appropriateness regarding clarity of instructions, questions, and format.

Statistical analysis

Data were downloaded from BOS and entered into SPSS version 21. Descriptive statistics were used to describe demographics, codeine use patterns, 'shopping' behaviours and help-seeking using frequencies and mean scores. Binary logistic regression was used to examine the association between independent variables and codeine dependence. Comparisons were made between those who were not dependent and those who were. The independent variables were demographic characteristics, codeine use (including main source of codeine, frequency of use, dose and reasons for use), codeine 'shopping' behaviours and sources for help-seeking to control the use of codeine.

Results

Between July 2015 and March 2016, 316 respondents completed the survey. The mean age of the sample was 35.3 years ($SD = 12.3$) and 67% were women. Over half of the sample were employed, either full (46.2%) or part-time (14.2%). The remainder of the respondents received student allowance (13.9%), disability allowance (6.0%), temporary benefits (2.8%) or pension (2.2%). In the sample, 3.2% reported no income. A majority were residents in the UK (90.5%); 9.5% were residing in Ireland.

The main sources of codeine were evenly split between 'over-the-counter' products purchased in a pharmacy (43.7%) and prescription codeine (43.4%). About one in twelve (7.9%) reported obtaining codeine through a family member, friend or acquaintance as their main source of codeine. A shop on the Internet was the main supply source for 3.2% of the respondents.

Most respondents took less than 240 mg codeine over a daily period (74.7%) and only 9.8% took more. However, 15.5% were unable to provide their daily consumption levels. A third of the respondents were daily users of codeine (36.7%).

Demographics and codeine dependence

Of the 316 respondents, 54 scored ≥ 5 on the Severity of Dependence Scale indicating codeine dependence (17.1%). During the last 3 months, 13.3% indicated tolerance to codeine on a

weekly basis; 8.5% indicated withdrawal; and 5.7% indicated both. The mean age of codeine dependent users (38.7 years; $SD = 11.1$) was significantly higher than the mean age of non-dependent users (34.7 years; $SD = 12.5$) ($P < 0.01$). Those who were dependent on codeine were more likely to be between 41 to 50 years old and less likely to be 30 years old and under, in comparison with those who were not dependent (Table 1). No significant differences were found for other demographic factors.

Codeine consumption and risk behaviour

Table 1 shows codeine consumption according to non-dependence and dependence. A higher proportion of codeine dependent users reported prescription codeine as their main source of codeine than non-dependent users. Dependent users were less likely to report 'over-the-counter' codeine as their main source of codeine compared to those who were not dependent. In relation to codeine consumption, there was a significantly higher proportion of codeine dependent users who were daily users of codeine, in comparison with non-dependent users.

Reasons for codeine use

Many used codeine for genuine medical reasons, namely for treatment of pain. However, those who were dependent upon codeine were less likely to have used codeine for pain treatment and more likely to have used codeine to help relax, to stop worrying about a problem, and to ease withdrawal symptoms of other opioids, compared to those who were not dependent.

Codeine 'Shopping'

Faking and exaggerating symptoms to get a prescription for codeine was indicated by 14.1% respondents, presenting the most frequent 'shopping' behaviour for prescribed codeine. This was followed by receiving prescriptions from three or more prescribers in six months (14%). The most common 'shopping' behaviour for 'over-the-counter' codeine was obtaining codeine from three or more pharmacies over a six-month period (35.8%). The least common was being refused a sale of 'over-the-counter' codeine in a pharmacy and then buying from the Internet (2.2%). 'Shopping' behaviours for prescribed and 'over-the-counter' codeine were significant in predicting an association with codeine dependence (Table 3).

Help-seeking to manage codeine use

Finally, table 4 shows that codeine dependent users were more likely to have sought help to manage codeine use on the Internet than non-dependent users. Overall, a higher proportion of respondents had sought advice on the Internet (12%) than from a GP/family doctor (5.4%). Less than 1% had sought advice from a pharmacist. Out of the full sample, eight (2.5%) had received specialised addiction treatment for codeine dependence.

Discussion

To our knowledge, this is the first study to use an online design to recruit a sample of codeine dependent users in the UK and Ireland. The results show that a third of the respondents were daily users of codeine, 9.8% took more than 240 mg codeine on their last occasion of use and 17.1% screened positive for codeine dependence. This compares favourably with an online survey of 800 'over-the-counter' codeine users from Australia where 17.3% screened positive for dependence.²² The mean age of codeine dependent users was significantly higher than the mean age of non-dependent users. Most had sought help to manage their codeine use on the Internet (12%). Only 5.4% sought advice from a doctor and less than 1% from a community pharmacy. The group of respondents were of a relatively young age and active Internet users. This may be one of the explanations for the high use of Internet-based help-resources. Importantly, our study found that codeine dependence is an issue with both prescription-only and 'over-the-counter' codeine.

Amongst those who were codeine dependent users, a higher proportion reported prescribed codeine as the main source of codeine, in comparison to non-dependent users. This may be explained by the higher potency of prescribed codeine formulations and highlights the need for GP monitoring of patients prescribed codeine on a long-term basis. The Royal College of General Practitioners (UK) has published fact sheets,²⁵ offering advice on what can be a difficult conversation with patients who would benefit from a change in their use of opioids.²⁶

Approximately one in ten exceeded the recommended 24-hours dose of codeine on the last occasion of use. Considering the high and frequent dosages recorded in our study, some patients may benefit from more regular consultations over a period allowing for dose tapering

to prevent withdrawal.²⁷ Further caution is needed in those using codeine combination medicines where high and repeated doses of paracetamol or ibuprofen can result in serious harm, such as gastrointestinal haemorrhage, ulcers and renal failure.²⁸

In comparison with dependent users, a higher proportion of non-dependent users took codeine for treatment of pain which is indicated in the accepted medical guidance for the use of this drug. However, we found that dependent users were more likely than non-dependent users to take codeine to help with anxiety and depression. Previous research suggests that codeine administration for emotional distress may be a good indicator for dependence or risk of developing dependence.²⁹ GPs and pharmacists need to be vigilant of reasons for use when deciding to prescribe or sell codeine.

About one in four had been refused codeine in a pharmacy and gone to a different pharmacy to obtain codeine. In contrast with these results, a qualitative study from the UK found that users of 'over-the-counter' codeine generally reported few episodes of being challenged by a pharmacist.³⁰ A possible explanation is the high and frequent dosages recorded in our study, which may have made it easier for pharmacists to identify inappropriate use. This finding highlights that restrictive dispensing policies and engagement between pharmacy customers and staff could potentially reduce excessive codeine use.

Help to regain control over the use of codeine was less likely to be sought from GPs and pharmacists than from sources on the Internet. This is consistent with findings from previous research in the UK where pharmacists were not referred to at all when seeking help to deal with codeine dependence.³⁰ But a shift in the role of pharmacies in providing a more comprehensive health service to the community has been shown to be beneficial.³¹ Alongside increased identification, treatment and referral of harmful codeine use and dependence in General Practice, screening and brief interventions delivered by community pharmacies could offer immediate support to individuals with codeine misuse experience and help local areas address problematic opioid use.

Use of the Internet for information on managing medicine addictions is not surprising given the anonymity and convenience offered. However, our findings underline the potential

for greater demand for treatment of codeine dependence if a greater number of codeine dependent users seeking help online were identified in primary care and referred to specialist help.

Limitations

The majority of questions in the online questionnaire were mandatory and had to be answered before respondents could continue to the next and missing data was therefore uncommon. However, a considerable amount of missing data on the respondents' use of codeine on the last occasion of use precluded us from analysing consumption according to non-dependence and dependence.

Several limitations of online recruitment should be considered. First, the anonymity offered by many forms of online participation means there are unknown characteristics of respondents. Second, in an online environment, respondents are not always precisely bounded by activity or geography.³² As such, there is not always a specific population to draw a representative sample from, restricting the ability to confirm an accurate response rate. Third, in our and other online studies, there may have been potential for selection in favour of younger, better educated and more technologically knowledgeable people. In contrast, an online survey potentially excludes more vulnerable people with no immediate access to the Internet, including those with unstable housing situation and people in prison. Fourth, other characteristics of online communities may include dishonesty or false replies due to lack of accountability, compared to face to face engagement of research participants. Despite these limitations this and similar online research studies²² are important initial investigations of codeine use and dependence. The strength lies in providing information about under-researched populations of codeine dependent users in the UK and Ireland.

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Competing interests

The authors have declared no competing interests.

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Tables

Table 1. Demographics and codeine use.

| | Respondents scoring <5 on the Severity of Dependence Scale (not indicating codeine dependence) (N = 262) | Respondents scoring ≥ 5 on the Severity of Dependence Scale (indicating codeine dependence) (N = 54) | |
|--|--|---|----------------------|
| | % | % | OR (95% CI) |
| Demographics | | | |
| Age (30 and under) | 47 | 28** | 0.44 (0.23–0.84) |
| Age (31 - 40) | 23 | 28 | 1.32 (0.68–2.57) |
| Age (41 - 50) | 18 | 37** | 2.69 (1.42–5.08) |
| Age (51 - 60) | 10 | 4 † | † |
| Age (61 and over) | 3 | 4 † | † |
| Female | 68 | 67 | 0.98 (0.52–1.85) |
| Residents UK | 90 | 94 | 1.01 (0.99–1.02) |
| Main source of codeine | | | |
| Prescribed by a professional | 42 | 50 | 1.38 (0.77–2.49) |
| Over-the-counter' from a pharmacy (no prescription) | 46 | 32* | 0.54 (0.29–1) |
| Codeine consumption | | | |
| Daily use in last 3 months | 25 | 94** | 51.52 (15.56–170.66) |

* $P < 0.05$; ** $P < 0.01$; † not calculated due to sample size; OR, odds ratio; CI, confidence interval.

Table 2. Reasons for codeine use.

| | Respondents scoring <5 on the Severity of Dependence Scale (not indicating codeine dependence) (N = 262) | Respondents scoring ≥ 5 on the Severity of Dependence Scale (indicating codeine dependence) (N = 54) | |
|---|--|---|-------------------|
| | % | % | OR (95% CI) |
| For treatment of pain | 91 | 78** | 0.35 (0.16–0.76) |
| To help sleep | 20 | 38** | 2.57 (1.38–4.81) |
| To help relax | 19 | 48** | 3.94 (2.13–7.29) |
| To feel better when down or depressed | 12 | 44** | 5.96 (3.1–11.47) |
| To get stoned or intoxicated | 10 | 17 | 1.82 (0.8–4.13) |
| To feel elated or euphoric | 10 | 28** | 3.65 (1.77–7.52) |
| To stop worrying about a problem | 7 | 33** | 6.78 (3.23–14.22) |
| To ease withdrawal symptoms of other opioids | 2 | 13** | 6.36 (2.05–19.75) |

* $P < 0.05$; ** $P < 0.01$; OR, odds ratio; CI, confidence interval.

Table 3. Codeine 'shopping' of prescription and 'over-the-counter' codeine.

| | Respondents scoring <5 on the Severity of Dependence Scale (not indicating codeine dependence) (N = 262) | Respondents scoring ≥ 5 on the Severity of Dependence Scale (indicating codeine dependence) (N = 54) | |
|--|--|---|-------------------|
| | % | % | OR (95% CI) |
| <i>Prescription codeine</i> | | | |
| Faked or exaggerated symptoms to get a prescription for codeine | 5 | 30** | 7.46 (3.38–16.48) |
| Received prescriptions from 3 or more prescribers in 6 months | 5 | 20** | 4.55 (1.95–10.64) |
| <i>'Over-the-counter' codeine</i> | | | |
| Bought codeine 'over-the- counter' from 3 or more pharmacies in 6 months | 31 | 61** | 3.57 (1.95–6.54) |
| Refused codeine in a pharmacy and then gone to a different pharmacy | 6 | 24** | 4.89 (2.2–10.88) |

** $P < 0.01$; OR, odds ratio; CI, confidence interval.

Table 4. Sources for seeking help to manage the use of codeine.

| | Respondents scoring <5 on the Severity of Dependence Scale (not indicating codeine dependence) (N = 262) | Respondents scoring ≥ 5 on the Severity of Dependence Scale (indicating codeine dependence) (N = 54) | |
|-------------------|--|---|-------------------|
| | % | % | OR (95% CI) |
| On the Internet | 6 | 41** | 10.57 (5.03–22.2) |
| From a GP | 3 | 19** | 8.3 (2–22.90) |
| From a pharmacist | < 1 | 2 † | † |

* $P < 0.05$; ** $P < 0.01$; † not calculated due to sample size; OR, odds ratio; CI, confidence interval.